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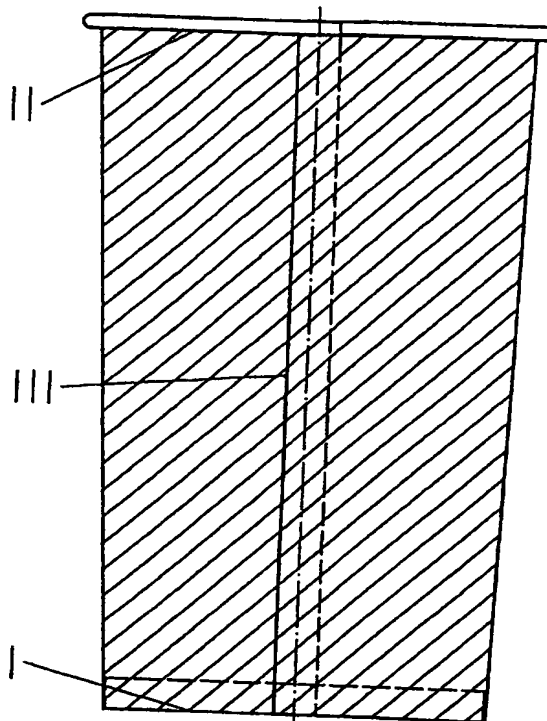
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(54) Title: DISPOSABLE VASE

(57) Abstract

A disposable vase characterised in being formed from a base permanently and rigidly attached to one or more sidewalls, the base and side walls being made of one or more light weight materials such as paperboard, coated with a plastic material such as low density polyethylene, fused at its joins, to be leak-proof for at least 7 days. The vase needs no assembly and can therefore be sold ready to use.



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Disposable Vase

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Field of the Invention

This invention relates to a disposable vase.

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Description of the Prior Art

15 Sales of cut flower bouquets of all sizes have been increasing substantially throughout the 1990's, partly due to an increase in the quality and range of flowers as well as an increasingly diverse network of shops from which flowers are available. This increase in the choice of flowers and retail outlets has lead to an increase in choice of flower accessories and flower delivering services. The trend seen in many product sectors of change lead by consumer demand for choice and convenience has also impacted the flower selling industry.

20 The number of recognised flower buying events have also increased: no longer do flower sales increase at just Valentine's Day. Mother's Day and the Easter weekend represent busier times than ever for retailers, whilst regular purchase volumes have been steadily increasing through the Spring and Summer seasons.

25 The increase in accessibility of flowers has led to flower giving now representing a higher share of the gift market than ever before. With more flowers ending up in the home, the year-round problem of vase shortages can occur when flowers are given at dinner parties, birthday or anniversary celebrations or when saying "thank-you", and can be exasperated if delivered

at an inconvenient time. Vase shortages are also common in the workplace and other public places like hospitals, bars and restaurants.

5 The solution of a vase that is disposable is well known: a disposable vase offers the convenience consumers increasingly expect of new products. For retailers, a disposable vase offered with a bouquet affords added value to the consumer, a factor of increasing importance in the highly competitive flower retailing market.

10 There have been many attempts to design a disposable vase. Reference may for example be made to EP-A-234139 and GB-A-2292078, which each disclose disposable vases. The disadvantage with these and all other prior art disposable vases, to the knowledge of the inventor of the present invention, is that these vases have to be erected or assembled by a user. Typically, the vases are also initially flat-packed, which aids transportation, storage and, in some circumstances, vending, but does lead to a requirement for a user to open out
15 several foldable panels to form a useable vase.

The requirement for a user to assemble a vase leads to several disadvantages: (i) erection of such vases is typically cumbersome and inconvenient to a user and (ii) the obligation to erect the vase for use reduces its attractiveness to many potential purchasers; people buying
20 flowers as a gift may be reluctant to present a flat packed vase as part of the flower gift. Where the vase is flat packed, there are yet further disadvantages: (i) folds may compromise stability; (ii) a flat-packed product may not appear to be adequately waterproof to a potential purchaser; and (iii) flat-packed vases are difficult to present to potential purchasers at a point of sale in an attractive manner because, even in an erected state, the presence of
25 folds can be inherently unattractive to a potential purchaser. Because of these multiple

disadvantages, the sales of such disposable vases have never achieved the levels hoped for by their developers.

Statement of the Present Invention

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In accordance with the present invention, a disposable vase is characterised in being formed from a base permanently and rigidly attached to one or more sidewalls, the base and sidewalls being made of one or more light weight materials, coated with a plastic material which is fused at one or more joins to render the vase leak-proof for at least 7 days.

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Hence, the invention is predicated on the insight that a disposable vase which is sold in a ready to use form, namely one in which the base is permanently and rigidly attached to one or more sidewalls, substantially overcomes all of the disadvantages of the prior art, erectable disposable vases. The plastic material is itself inherently leak-proof; the plastic material is also fused together at one or more joins so that the joins are also leak-proof. The vase is therefore leak-proof for at least the lifetime of the typical, minimum guaranteed lifetime of fresh, cut flowers, namely 7 days. Preferably, the vase is also leak-proof for the maximum likely lifetime of fresh, cut flowers, namely 21 days.

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The light weight material may be paperboard and the plastic material may be low density polyethylene.

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The exterior side walls of the disposable vase may be capable of receiving colour printing inks. This enables attractive colour images to be printed onto the vase, making the vase a suitable accompaniment to a flower gift. The flower vase may also have a shape which allows several vases to form a nested stack. A nested stack can be readily transported to the

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florists or other sales venue, stored there and form the basis of an attractive sales display. An inverted, truncated cone is a suitable shape for nested stacking. A taper angle of 2 degrees has been found to be appropriate, although greater angles, such as 3 or more degrees, are possible. For some taper angles, it may be desirable to increase the stability of the base by
5 increasing the weight of the base or the footprint of the base. Other shapes of the present invention are also possible, such as vases with square or rectangular cross sections. Where the sides of such vases taper, then they may also be stackable in a nest.

10 In another aspect, there is provided a method of manufacturing a disposable vase as described above using a machine adaptable for automatic packaging or paper cup manufacture.

Embodiments of the present invention have successfully met the demands of the high volume flower sales market since they have been 100% leakproof, stable, self-supporting and
15 therefore can be supplied to retailers and sold to consumers ready to use, stackable, highly attractive and able to display varying bouquet sizes and support flowers during storage and delivery.

Brief Description of the Drawings

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The invention will now be described with reference to the accompanying drawings in which:

Fig. 1 is a side elevation of a disposable vase according to the invention;

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Fig. 2 is a plan view of a sidewall blank of a disposable vase according to the invention;

Fig. 3 is a sectional plan view of a web of base material of a disposable vase according to the invention.

5

Detailed Description

The disposable vase of the present invention is exemplified by the disposable vase from Catalyst Developments (UK) Ltd ('The Catalyst Disposable Vase'). The Catalyst Disposable Vase has won the 1998 European Union Business Innovation Award for the 'Most Innovative Product of the Year' (overall winner) and the 1998 Ford Motor Company Award for 'Entrepreneurial Innovation' (overall winner).

The design of The Catalyst Disposable Vase has required substantial developments in paper cup and food carton technology: the main areas of development lie in preventing leakage for at least the life of the most long lasting fresh cut flowers (approximately 3 weeks), increasing strength, stability and convenience of use and providing far greater flexibility and more options for printing graphics. The difference in performance of embodiments of the present invention over conventional products is best illustrated by an example: a typical Catalyst Disposable Vase may be substantially leakproof for at least three weeks. By comparison, most paper cups leak within six hours and none last more than twenty four hours.

Also, as noted above, The Catalyst Disposable Vase employs colour printing techniques, which have not previously been employed to decorate disposable vases, to allow high quality graphics to be printed externally. In addition, The Catalyst Disposable Vase is internally

printed (so that the inside and rim of a vase can be coloured or carry a design: it is not merely white, as the inside of a disposable cup would be).

5 The Catalyst Disposable Vase is an inverted, truncated, conical-shaped round cross-sectioned disposable vase (see Fig. 1) of sheet material comprising sidewalls (see Fig. 2) which form the main body of the disposable vase and a base (see Fig. 3) which forms the bottom of the disposable vase. The sidewalls are printed to create the preferred interior and exterior graphics.

10 The sidewalls are made of virgin paperboard, coated with layers of PE (polyethylene), clay, varnish, sulphate pulp and CTMP (chemical thermo mechanical pulp), layered as follows (starting with the side used that becomes the product's exterior):

- varnish layer
- External print layer
- 15 • PE-coating 15 gsm
- Clay top-coating 10 gsm
- CTMP pre-coating 10 gsm
- Sulphate pulp top-layer 20%
- Sulphate pulp + CTMP middle-layer 60%
- 20 • Sulphate pulp back-layer 20%
- Internal print layer
- PE-coating 13 gsm

The bases are made from the same virgin paperboard coated with layers of PE, clay, varnish, sulphate pulp and CTMP, and also alufoil, layered as follows (starting with the side used that becomes the product's exterior):

- External print layer
- 5 • PE-coating 15 gsm
- Clay top-coating 10 gsm
- CTMP pre-coating 10 gsm
- Sulphate pulp top-layer 20%
- Sulphate pulp + CTMP middle-layer 60%
- 10 • Sulphate pulp back-layer 20%
- PE-coating 13 gsm
- alufoil layer
- PE-Top-coating 30 gsm

- 15 The Catalyst Disposable Vase is formed using an automatic paper cup machine, such as a Rissen Ramona ST100, which is commonly used for the production of round paper cups, drinking and vending cups, ice cream and food containers from 0.1 up to 2 litres contents. For The Catalyst Disposable Vase, this machine is fitted with bespoke tooling and parts. Other kinds of machines used to produce food packaging may also be used.

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- Whilst the sidewall material is in reel form it is first one-colour printed on the surface that will become the interior of the disposable vase. A coating of polyethylene is then applied to both board surfaces prior to an electrostatic charge being applied through the whole material. This allows full high quality colour printing over the polymer on the surface that will become
- 25 the exterior of the disposable vase. The reel of sidewall material is then cut to the specified

sheet size. The required exterior graphic designs are then multiply six colour printed on the surface that will become the exterior of the disposable vase whilst the sidewall material is in sheet form. Approximately ten exterior graphic designs are printed on to each sheet. During the same pass the exterior surface is also coated with a high-gloss high-slip UV varnish. This high-slip varnish aides de-nesting of stacked disposable vases. The sidewall material is then die-cut into the required shape to form the disposable vase. This die-cut shape is known as a blank. It is shown in Figure 2. The number of blanks produced from each sheet is the same as the number of printed exterior graphic designs.

10 The blanks are placed into a device, known as a blank magazine, in their hundreds where they are held prior to being fed into the automatic paper cup machine. Once the machine is started, these blanks are then individually fed from the blank magazine onto a tool around which the board material is wrapped to form the conical shape of the vase or whatever shape the product takes. This part of the tooling is known as a mandrel and turns and winds the blank

15 around itself to form the sidewall of the disposable vase. These mandrels in turn are bolted to a part of the machine, known as a turret, which rotates the mandrels to the different functions of the machine with different tooling to form the disposable vase. In the next position the mandrel stops at, the side seal is made by ultrasonically welding the two polyethylene coatings together to give a water-tight seal. In the next position at which the mandrel stops

20 the base material is fed in off a roll of material known as a web (see Fig. 3) and is punched and drawn. This process involves cutting a circular disc from the web which is 16mm greater in diameter than the base opening. This disc is then pushed through a hole which is 16mm less in diameter than the disc to form a base with an 8mm wall around it for sealing purposes. This is then placed into the base of the formed sidewall of the disposable vase prior to the

25 mandrel moving to the next stage.

At the next two stages, hot air is blasted into the base of the vase to melt the polyethylene coatings so that a water-tight bond may be formed. The next stage folds the bottom of the sidewall onto the wall of the base (see item I in Figure 1). The mandrel then moves to the next stage where a fold is pressed against the base wall and a water-tight seal is formed (see
5 Fig. 1 item III). At the next stage, which is the last position on this turret before returning to the start point, the partially formed disposable vase is transferred to a second turret. The bottom of the vase is therefore not only strengthened by a double wall of board but also by ridges on the underside of the external base rim.

10 The first position after the transfer of the disposable vase to this turret initiates the rolling down of the top of the disposable vase to form the top rim, known as a bead (see Fig. 1 item II). The bead is then finished off at the next stage where the finished disposable vase is then ejected out of the machine.

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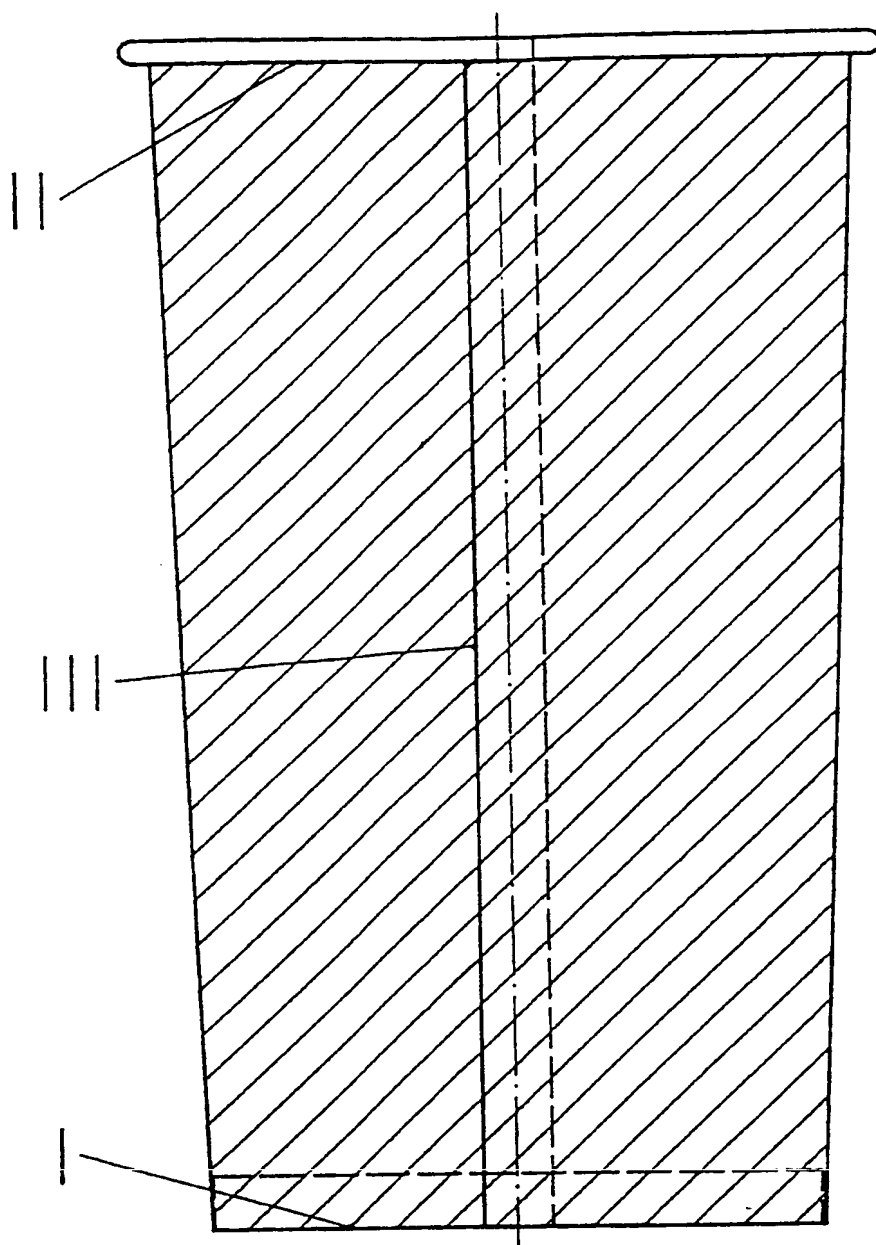
Claims

1. A disposable vase characterised in being formed from a base permanently and rigidly attached to one or more sidewalls, the base and side walls being made of one or more
5 light weight materials, coated with a plastic material which is fused at one or more joins to render the vase leak-proof for at least 7 days
2. The vase as claimed in Claim 1 or 2 wherein the light weight material is paperboard.
- 10 3. The vase as claimed in Claim 1 or 2 wherein the plastic material is a thermo-plastic capable of forming a leak-proof layer upon paperboard.
4. The vase as claimed in Claim 1 or 2 wherein the thermo-plastic is low density polyethylene.
- 15 5. The vase as claimed in Claim 1 wherein the vase is substantially leak-proof for 21 days.
6. The vase of Claim 1 characterised in having a shape which allows several vases to form a nested stack.
- 20 7. The vase of Claim 1 wherein the exterior side walls are treated to be capable of receiving colour printing inks.
8. The vase of Claim 1 wherein material used to make the sidewall whilst in reel form is
25 first one-colour printed on the surface that becomes the interior of the vase, then polymer-coated prior to being electrostatically charged throughout and then, after being

sheeted, is six-colour printed and coated with a high gloss high-slip varnish on the side of the material that will become the exterior of the disposable vase.

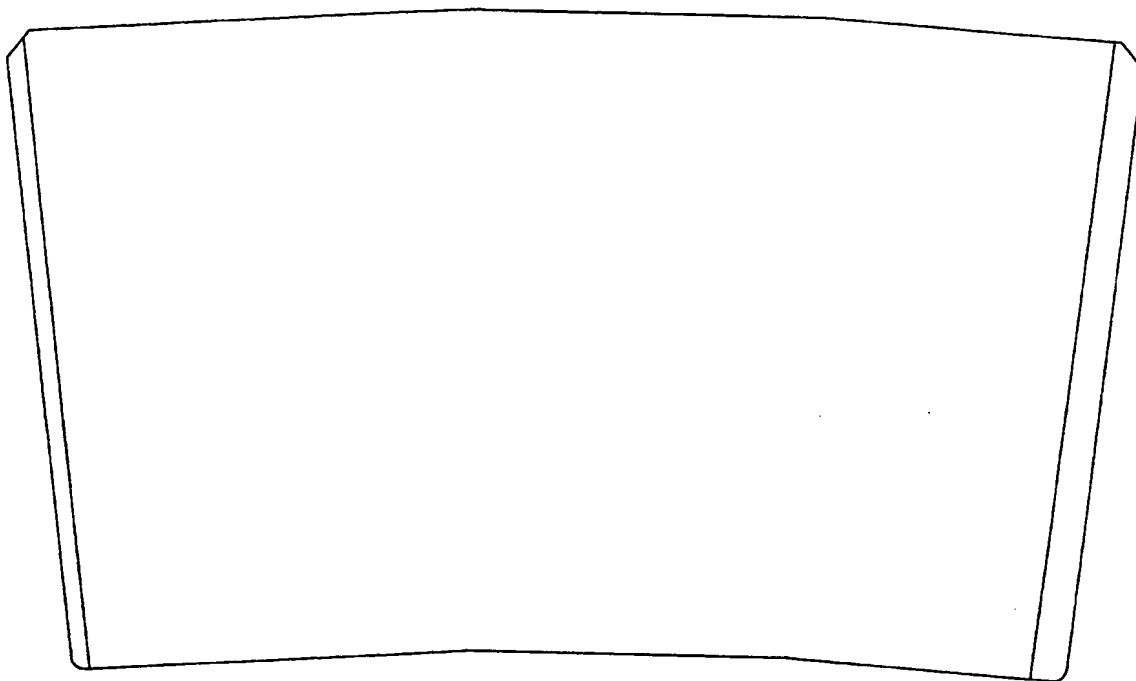
- 5 9. The vase of Claim 6, wherein the sidewalls have a taper angle of between two and three degrees, enabling one disposable vase to stack inside another.
10. A method of manufacturing a disposable vase as claimed in any preceding Claim using a machine adaptable for automatic packaging or paper cup manufacture.
- 10 11. The method of Claim 10, wherein blanks are fed from a blank magazine onto a series of mandrels on the machine and side seals of the blanks are ultrasonically welded to give a leak-proof seal.
- 15 12. The method of Claim 10, wherein base material is fed from a web and punched and drawn prior to being placed into a base of a formed sidewall.
- 20 13. The method of Claim 10, wherein a water-tight bond is formed by blasting hot air into the base to melt the plastic material prior to the bottom of the sidewall being folded onto the wall of the base and a fold being pressed against the base wall.
14. The method of Claim 10, wherein a bead is formed by rolling down the top of the sidewall.

Figure 1



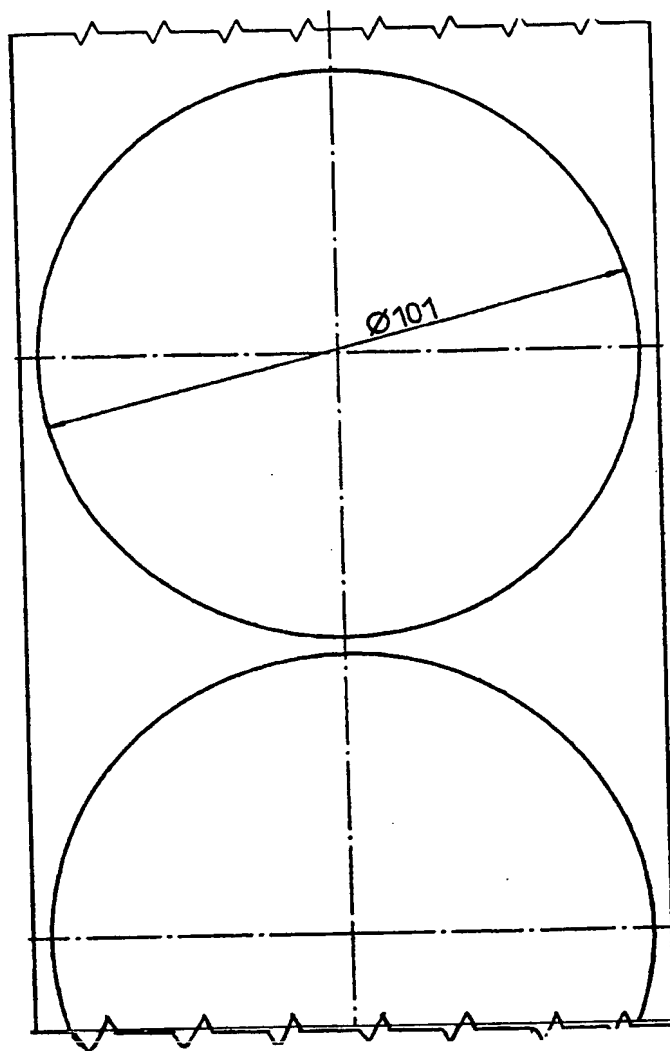
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Figure 2



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Figure 3



INTERNATIONAL SEARCH REPORT

Int. J. Application No

PCT/GB 99/00170

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A47G7/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A47G B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 556 166 A (PENTTILÄ) 3 December 1985	1-5, 10-12
Y	see column 3, line 35 - line 37; claim 4; figures	7,8
X	US 4 117 971 A (ITOH) 3 October 1978	1-3,5,6, 9,10,14
	see column 2, line 47 - line 51; figures 1-4	
X	GB 2 176 457 A (WEIDERHAMMER PACKUNGEN KG GMBH & CO.) 31 December 1986	1-3,5,7, 10-12
	see abstract; claim 2	
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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INTERNATIONAL SEARCH REPORT

International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>DATABASE WPI Week 9314 Derwent Publications Ltd., London, GB; AN 93-112447 XP002104109 & JP 05 050536 A (HONSHU PAPER MFG CO LTD) , 2 March 1993 see abstract</p>	7,8
A	<p>US 5 022 554 A (HEETER ET AL.) 11 June 1991 see claim 4; figures 4,5</p>	1-4,6,7, 9,10

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte lional Application No

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